# INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
# POWAI, MUMBAI 400076.

## Advertisement No.: IRCC/EXT228/2022

### Job Title
Project Research Associate

### Job Reference Number
50362529

### Application End Date
15.11.2022

### Type of Employment
Proj. Staff Contract

### No. of Position(s)
4

### IITB Project Recruitment:

Project Title:Diseases and Interventions Modelling to Action Group (DIMAG)

About the project: IIT Bombay is the anchor organisation of a Disease Modelling Consortium. The consortium will house a secretariat and partner with various institutions for the disease modelling work. The disease modelling consortium will serve as a domestic institutional set-up for supporting policy & programmatic decisions on infectious diseases through transmission and system modelling. Their modelling work will act as a bridge between control & elimination of infectious diseases and strengthening integrated disease surveillance.
The main objectives of the consortium are to:
- To build an institutional nucleus for the country's disease modelling ecosystem, capacities, & capabilities to grow
- To generate sub-national disease burden and impact estimates
- To guide disease prevention interventions dynamically in focus geographies
- To measure progress and evaluate the performance of the various disease control and elimination programmes through disease modelling
- To train future modellers through various programs and workshops

### Essential Qualifications & Experience:
BTech with 2 year experience / Mtech /PhD degree in any engineering discipline or Information Technology, Applied Mathematics, Statistics, Computational Mathematics. RAs should be experts in the use of computer systems, databases and various software applications.
Expertise in the use of C++, python, Matlab / R is compulsory. RAs should be experts in handling linux based servers.
Experience with
(i) MPI for being able to compute using multiple CPUs/cores,
(ii) map-reduce for dealing with distributed file systems and distributed system/cluster computing and
(iii) use of multiple GPUs and doing CUDA level programming, is highly desirable.

### Job Profile:
a) The RAs will be required to program mathematical/statistical models to study the transmission of infectious diseases in python/Matlab/R. These models will be used for prediction/forecasting of disease burdens under different interventions. The RAs should facilitate data mining for structural/functional trends across diseases, treatments, geographical and temporal variations. Toward this, they should be able to design architecture to implement Application programming

Interface (APIs)/apps/tools to harness the repository for case history search, clinical evidence collection, link to other digital collections (pharmaceutical formulations, basic medical sciences, ontologies, etc).

b) Disease modelling will very often require the use of computing using

(i) multiple cores/CPUs

(ii) distributed systems or clusters and

(iii) GPUs. So expertise in the use of distributed computing at one or more of different levels of granularity using appropriate paradigms such as MPI (for multi-core), CUDA Programming (for GPUs) and Map-Reduce (for distributed systems) is highly desirable.

c) The RAs will also be responsible for maintaining and managing the health data repositories while ensuring both privacy and security. Care should be taken to ensure that the data made available for analysis has no information that could be used to identify an individual (i.e., is de-identified). Further, the RAs should be capable of de-identifying the data suitably as and when required. Also, the RAs should preferably have some exposure to federated data management.

d) The RAs should understand how one can combine multiple physical disk drive components into one or more logical units, computation of checksums (at least at the software level). To ensure data safety, the RAs should be familiar with data storage virtualization technologies (such as RAID) at least at the software level. The RAs will be working on protecting health data and fixing glitches that may slow down the exchange of data or corrupt its accuracy.

## *Pay Details:*
Level PR-O1: Salary range from Rs.33600 to Rs.67200 + Rs.6250/- Out Of Campus Allowance (if applicable) p.m.

## *General information:*
The position is temporary for a period of 1 year and tenable only for the duration of the project. The appointment is for time bound project and the candidate is required to work mainly for the successful completion of the project. The selection committee may offer lower or higher designation and lower or higher salary depending upon the experience and performance of the candidate in the interview.

Candidates called for interview will be required to attend at his/ her own expenses.

For any queries/clarification please contact: recruit@ircc.iitb.ac.in